31st Anniversary
Since 1980

English

CW 991
(72 Zone)

CW 991
(24 Zone)

CW 662
(18 Zone)

Temperature controller
&
Sequence timer

TW 700
(8 Zone)

TW 600
(8 Zone)

YUDO

High precision

High precision (±0.01℃), high reliable hardware

Multi zone

Multi zone configurations (Max. 240 zones, 6 zones / unit)

Networking

Remote control based on standard MODBUS-RTU

Easy use

User friendly touch panel equipped with HMI(Human-machine interface).
A quick and easy way to manage process parameters
Integrated sequential valve gate control and hot runner control

Data management

Easy data management to store and manage files in folders
Self-diagnostics
(Ground fault, Triac short, Heater Open/Short, Sensor reverse,
Sensor burnout, RJC, ADC, Fuse, AC)

Features

72 Zone

24 Zone

- Easy additional zone installation
- Quick Auto Tuning for fast heat-up
- Auto- recognition for operating zone
- Select individual, designated or all zone(s)
- Auto-detection for a type of sensor
- Manually open the designated all gates

Principal function

Mold control data management

It provides easy control by saving and managing desired parameters.
(Capacity 12G, Min. over 10,000 items)
Can save information on mold control. (Model, Photo, Hot runner Image, Date)

Sequence control / cascade

Sequential valve gate control timer function is added to CW 991 for the integrated hot runner control. (Max. 12 outputs)
3 modes are preprogrammed. (Mode A / B / C)

Error log

Error messages are saved automatically if error occurs. (Max. 5,000 messages)
Data can be saved and synchronized from Main PC to USB.

System diagnosis (Mold test)

The controller has a diagnostic testing tool, which allows you to check that every zone correctly operates. (Wiring, automatically correct T/C poles in case of reverse T/C, excessive current check, etc.)

User friendly data setting

The processor can easily set all data for control. (User and manager login mode)
Easy monitoring for data setting and remote control are available.

Help (Interface)

User manual is embedded in the panel PC for easy use.
Language - English (Option available for multi languages)

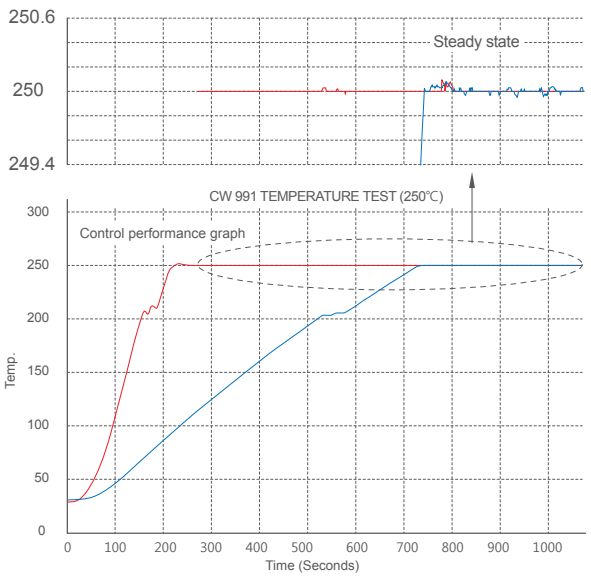
Precise control

Precise temperature control

- CW 991 automatically conducts auto tuning when controlling heater temperatures, and controls temperatures precisely and stably. (Precision : within ±0.1℃)
- No more over shooting problem during heating up. (within 1℃ / less than 1 times)
- Excellent response time offers fast and precise temperature control when changing the target temperatures. (Frequency : 100 ms)
- CW 991 interacts with ambient temperature. It's best solution for high temperature molds. (steam mold, electric heat mold, etc)

A variety of applications

- It precisely controls and performs great, especially with sensitive heaters such as ultra mini heater.
- It can precisely control sensitive heaters.
- Control range : 0 ~ 500℃ (Option available for 999℃)



CW 991

Temperature display

Text view

- The data is displayed as text values.
- This screen allows you to view target and actual temperatures, output rates and currents of heaters. Furthermore, it allows you to change data setting values.

Bar chart view

- The data is displayed in a graphical format.
- This screen allows you to view target and actual temperatures, output rates and currents of heaters.
- Switch on or off individual zone by touching bar graph.

Picture view

- The data is displayed in an image format.
- This screen allows you to add and delete user selected zones on the image.

Digital view

- The data is displayed in grid format.
- To change the data setting from Basic Setting Screen by touching individual grid.

Sequence timer [Optional timer]

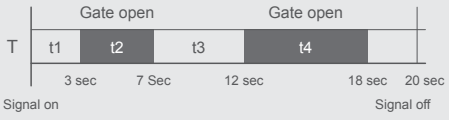
Timer setting screen

- To change sequential mode and display a unit of 12 output Sequence Injection timer.
- To open or close each valve gate individually to precisely control the material flow front.
- To manually open or close the selected valve gates or all valve gates at the same time.

Mode A

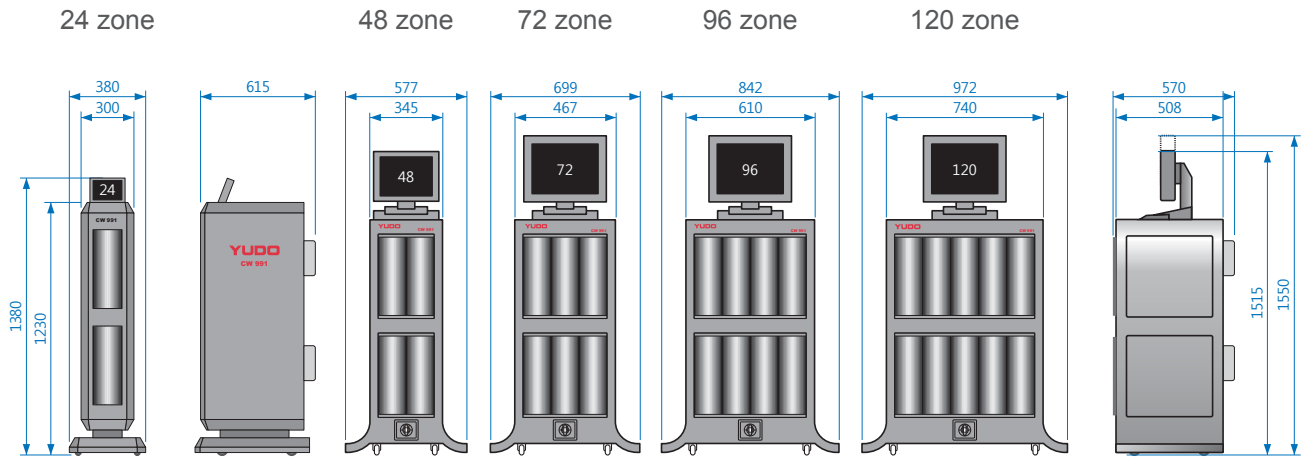
Mode B

Mode C



t1 : Delay 1 time / t2 : Open 1 time / t3 : Delay 2 time / t4 : Open 2 time

Dimensions



Model	Cabinet sizing	Max. capacity	Remarks
CW 991	12 - 24 Zone	100A	· 7 inch wide touch panel / Optional 12 output sequence timer.
	28 - 48 Zones	100A	· 12 inch touch panel / Optional 8 output sequence timer.
	54 - 72 Zones	150A	· 15 inch Touch panel / Optional 12 output sequence timer.
	78 - 96 Zones	150A	
	102 - 120 Zones	225A	

Specifications

HMI

Display console	12, 15" TFT Monitor (24 Zone - 7" wide)
Input device	4 wire resistive touch panel
Language	English

Input

Zone	6 Zone/Unit
Sensor type	Thermocouple TC-K, TC-J (IEC-584)
Control range	0.0 ~ 500.0 ℃ (32~932℉)
Scan rate	100 ms
Scan accuracy	± 0.5 % of F/S
Display resolution	0.1 ℃ (0.18℉)
Compensable temperature variation	± 2.0 ℃ (-15 ~ 65℃)

Output

Zone	6 Zone / Unit
Output mode	Phase control, Zero cross control
Output resolution	Phase control : 1,000 Res. Zero cross control : 120 Res. (60Hz), 100 Res. (50Hz)
Max. admissible current	15A / Zone, 50A / Unit(6 Zone)
Period of renewal	1 sec.

Environment

Operating temperature	0 ~50℃ (32~932℉)
Operating humidity	20 ~ 90% RH (NO condensing)
Storage temperature	-25 ~ 70℃ (~158℉)
Insulation resistance	500VDC, Over 20MΩ (Input power-field ground, Input/Output-field ground)
Withstand voltage	1,500Vac 50/60Hz 60sec (Input power-field ground, Input/Output-field ground)
Vibration resistance	10 ~ 55Hz, Bandwidth 0.75mm, 3directions 4swings, 5min/swing
Impact resistance	147㎧, 3directions 3times
Magnetic effect	Below 400 AT/m
Warming-up time	Over 30 min

Power

Voltage	3 phases 4 lines 380V, 3 phases 3 lines 220V
Frequency	50/60Hz
Consumed power per cabinet configuration	154W,175W, 217W, 260W, 315W (24, 48, 72, 96, 120 Zone - 220VAC)

Data communication

Protocol	EIA-RS485/422, USB V2.0 (HOST, SLAVE)
Max. number of connection	Max. 21 IDs (include master) Repeater is required if additional IDs are connected.
Communication method	Half- duplex 2 wire
Communication speed	19,200 bps
Port parameter	NONE PARITY, 8 DATA, 1 STOP BIT
Communication distance	About within 1.2 km (depending on the installation environment)

Sequence timer [Optional timer]

Input	Injection signal	24 VDC
	Voltage	110 VAC, 220 VAC
Output	Relay	24VDC (Max. 100mA) x 12 outputs (valve gates)
		110VAC (Max. 1A) x 12 outputs (valve gates)
		220VAC (Max. 1A) x 12 outputs (valve gates)
System rule	Mode	Mode A : Set delay 1 time
		Mode B : Set delay 1, Open 1 times
		Mode C : Set delay 1, Open1, Delay 2, Open 2 times
Misc.	Setting time unit : 0.00 ~ 999 sec.	
	Independent running.	
	Detect and display solenoid value output voltage.	
	Open all valve gates or individual valve gate.	

※ CW 991 48 zone model use 8 outputs sequence timer instead of 12 outputs sequence timer.

CW 662

High precise temperature control

1) High speed auto tuning
Precise control by stable 'PID Control Algorism'

High resolution

2) High resolving power and high speed Delta-Sigma AD converter

High reliability

3) High reliable hardware design

Protection

Preventing from triac damage
Detecting over-current and inspecting ground fault

Error code saving

Detecting *16 different error and saving

*(Sensor disconnection, Sensor polarity reverse, Heater disconnection, Heater short-circuit, Triac short-circuit, Ground fault detection, Fuse 1 breakdown, Fuse 2 breakdown, Fuse 1/2 breakdown, High limit alarm, Low limit alarm, Frequency alarm, CT, RJC, ADC,Corrective alarm)

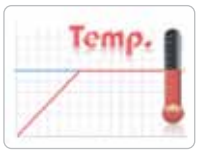
Features

1) - Optimal speed control in any type of heater
(From low voltage nozzle to high capacity manifold)
- Quick tuning & Full tuning

2) - High precise measurement within ±0.01℃
- Quick response by implement high speed sampling

3) - High-brightness LED with uniform and broad visibility
- Shutdown input power in the case of over voltage
- Apply surge protector (3,600 Vac)
- Accurate current detection using high precise CT (±0.2%)
- Stable system with better external noise tolerance

Principal function



Precise temperature control

· It provides high precise measurement within ±0.01℃ and operation to control temperature stably.

Standby function

· This function is to control the output power by setting values in case of production pause for a while when the setting time is up, it recovers the original value.

Soft-Start

· When power on, this function protects heaters from excessive output.
· Soft-Start helps heaters to prevent humidity-caused and over-current-caused damage by slow preheating.

Manual temperature calibration function

· This is a function to compensate the temperature at the setting mode by manual in case of abnormal difference between PV and SV temperatures.

Parameter protection function

· This security feature helps to prevent accidental changes to parameter settings.

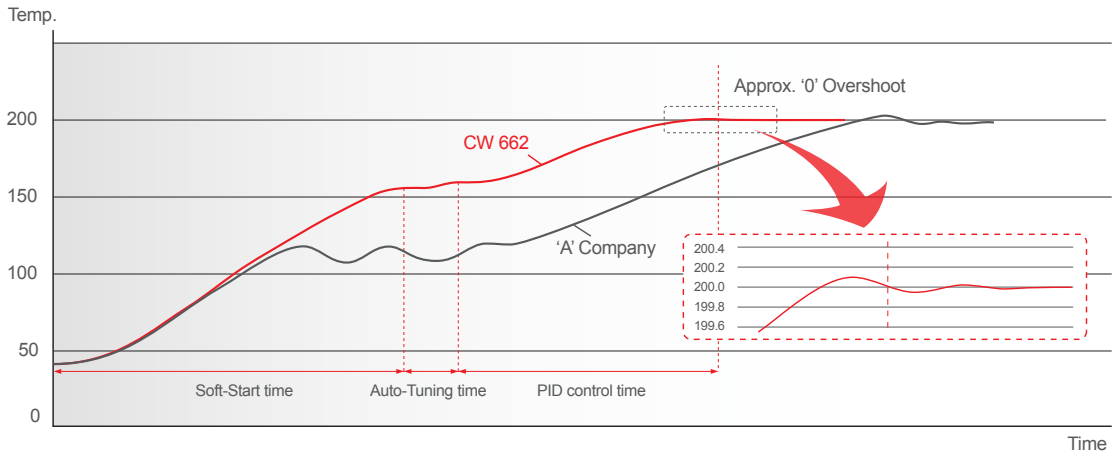
Thermocouple failure indication

· Alows users to check the type and status of thermocouple.
· When thermocouple disconnected or polarity reversed during the operation, the operation automatically terminates the output.

Heater failure indication

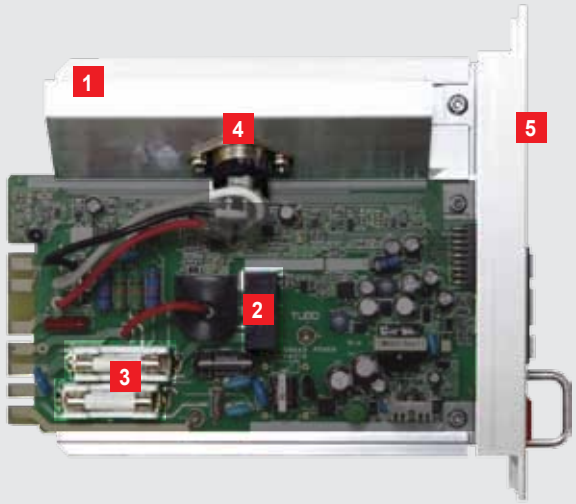
· In case of short-circuit & disconnection over-current, it shows error signs and terminate the output.

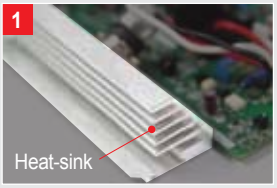
Algorism

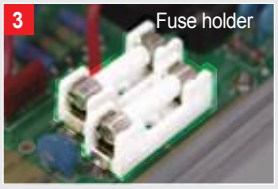


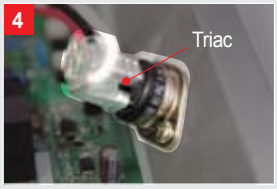
CW 662

Hardware upgrade









1. Heat-sink plate

- High capacity heat-sink plate prevents triac damage by heat.

2. Ground fault self-inspection

- This function is to protect heaters and operators by automatically stopping over-current resulted from a short circuit.
- Relay can automatically stop leaked current to protect controller's electric circuit in case of emergency.

3. Fuse

- Fuze holder application - minimizing fuze breakdown by isolating contact resistance rise.
- 32bit CPU application - minimizing fuze breakdown by stopping over-current spontaneously.

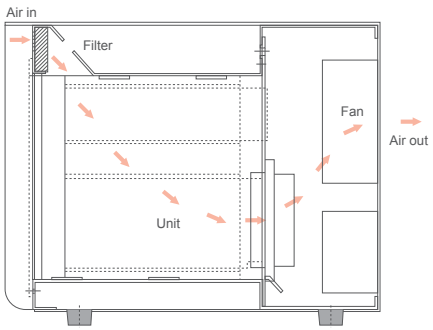
4. Triac

- High capacity triac(30A) application - minimizing triac damage caused by over-current.

5. Display

- Bright and uniform display and broaden visibility with high-brightness LED
- Thermocouple type (IC/CA) display
- Temperature symbol display (℃, ℉)

Main frame



1. CW 662 main frame achieves high durability to protect the control module, by double cell structure.
2. The new frame achieves high quality air ventilation system.
3. A PET filter is installed to the ventilation holes to clean the circulation air.
4. Reinforced guide rail in the frame ensures the control module mounted in the frame smoothly and rigidly.
5. The material of filter : PET Thickness : 10mm
   Heat resistance : 100℃ Capacity of filter : 70

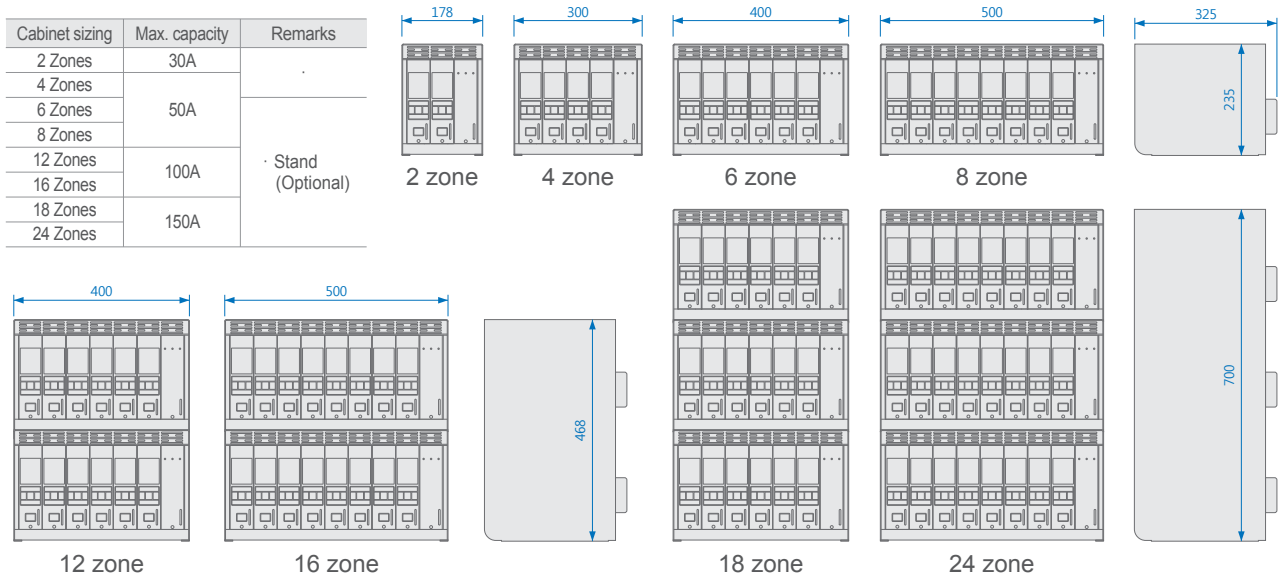
Mode parameters

Mode parameters can be selected according to the operating conditions.

PV FND	Description	SV panel	
		Feasible range	Factory-set
AL-L	Low process temperature alarm	± 99	0℃
AL-H	High process temperature alarm	± 99	0℃
Unit	Calibration of temperature	0 / 0.0	0
Stby	Users set standby time Users set standby temperature	St_t : 0~23h 59min StSV : 0~400℃	St_t : 1.00(1h) StSV : 0~50℃
CdsP / FdsP	Users selects temperaure unit (℃ or ℉)	Cdsp, Fdsp	Set by, Customer order
LoCK	It prevents accidental or unauthorized changes to parameter settings.	On, Off	Off

Dimensions

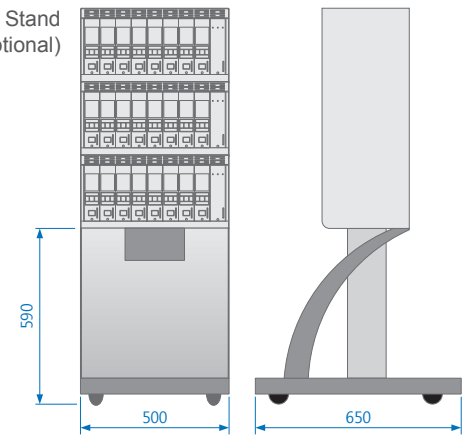
Cabinet sizing	Max. capacity	Remarks
2 Zones	30A	·
4 Zones	50A	· Stand (Optional)
6 Zones		
8 Zones		
12 Zones	100A	
16 Zones		
18 Zones	150A	
24 Zones		



Specifications

Input voltage	Free voltage 100V ~ 240 V(50 / 60 Hz)
Thermocouple type	TC-K (IEC-584), TC-J (IEC-584)
Calibration of temperature	± 0.5 % of F/S
Output mode	Phase angle control, Zero cross control
Capacity	15A(Max 16.5A), 1 zone/Unit
Ambient temperature range	0 ~50℃ (32~122℉)
Humidity	20 ~ 90% RH
Temperature control method	PID control
Approved	CE UL/cULus

CW 662 Stand
(Optional)



TW 600 & TW 700

Removal or re-positioning of weld line.

Control of the injection volume by gate operation time.

Improvement on flash and short-shot.

TW 700 - Pendant type timer

Features

TW 700 (8 Zone)

- Simultaneous control on the max. 8 gates.
- Simple operation to change the value and setting time.
- Display the solenoid valve output voltage.
- Support various operating modes on each gate. (MODE A / B / C)
- Display the working condition on a real-time basis.
- Setting-data memory function in a power-off status.
- Software power on/off application.
- Manual on/off control function on each or all gate.
- Solenoid valve output voltage AC220V, DC24V available. (pneumatic solenoid only)
- Precise time control. (Min 0.01sec. ~ Max 999sec.)
- Initialization function.
- Smart and solid design.

Specifications

Supply voltage	1 Phase AC(100 ~ 250VAC), 50/60Hz
Voltage bandwidth	Stable within ±20% supply voltage swing
Supply earth-leakage trip	10mA per individual zone ground fault monitoring (note: this is for tool protection)
Consumption current (idle state)	Max. 11VAC
Injection signal input voltage	DC24V, AC220V (Free voltage)
Display resolution limit	0.01sec
No. of zones	8 zones
Relay output mode	Relay arbeit contact
Output (solenoid) capacity	2.5A @ DC24V (1A @ AC220V)
Output (solenoid) voltage	DC24V, AC220(Only for pneumatic solenoid) (*AC solenoid valve output voltage is up to AC input power.)
Consumption current (solenoid)	Max 100mA per zone
Operating temperature	0~50℃ (32~122°F)
Operating humidity	0~90% R.H(Non-condensing)

TW 600 - Cartridge type timer

Features

TW 600 (8 Zone)

- Simple operation to change the value and setting time.
- Display solenoid valve output voltage.
- On/Off function manual gate.
- Solenoid valve output voltage.
  (Pneumatic : AC 220V / DC 24V [Hydraulic is optional])
- Support various operating modes. (MODE A / B / C)
- Display the working-condition on a real-time basis.
- Setting-data memory function on a power-off status.
- Precise time control application (Min 0.01sec. ~ Max 999sec.)
- Power on/off based on the software.

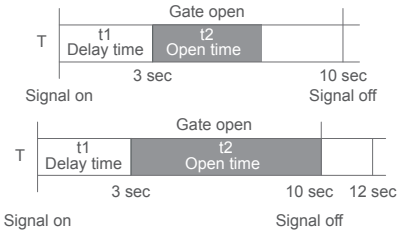
Specifications

Main power supply (Timer case)	AC(85~264VAC),50/60 Hz
Injection signal input power	DC 24V, AC 110V, AC 220V (Free voltage)
Solenoid valve output voltage	DC 24V, AC110V, AC220V *AC solenoid valve output must be same with AC input power .
Operating temperature	0℃~ 50℃
PCB structure	
① Power board	Power PCB
② Relay board	Relay (Solenoid valve on/off)
③ CPU board	MPU, Out signal input/output, Display, Switch signal input
④ Front board	Solenoid valve output display (24V or 220V)
⑤ Mother board	DC main power distribution and connector

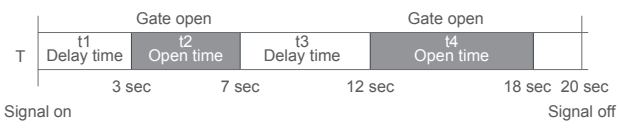
Mode operation (TW 700 & TW 600)

MODE A

MODE B



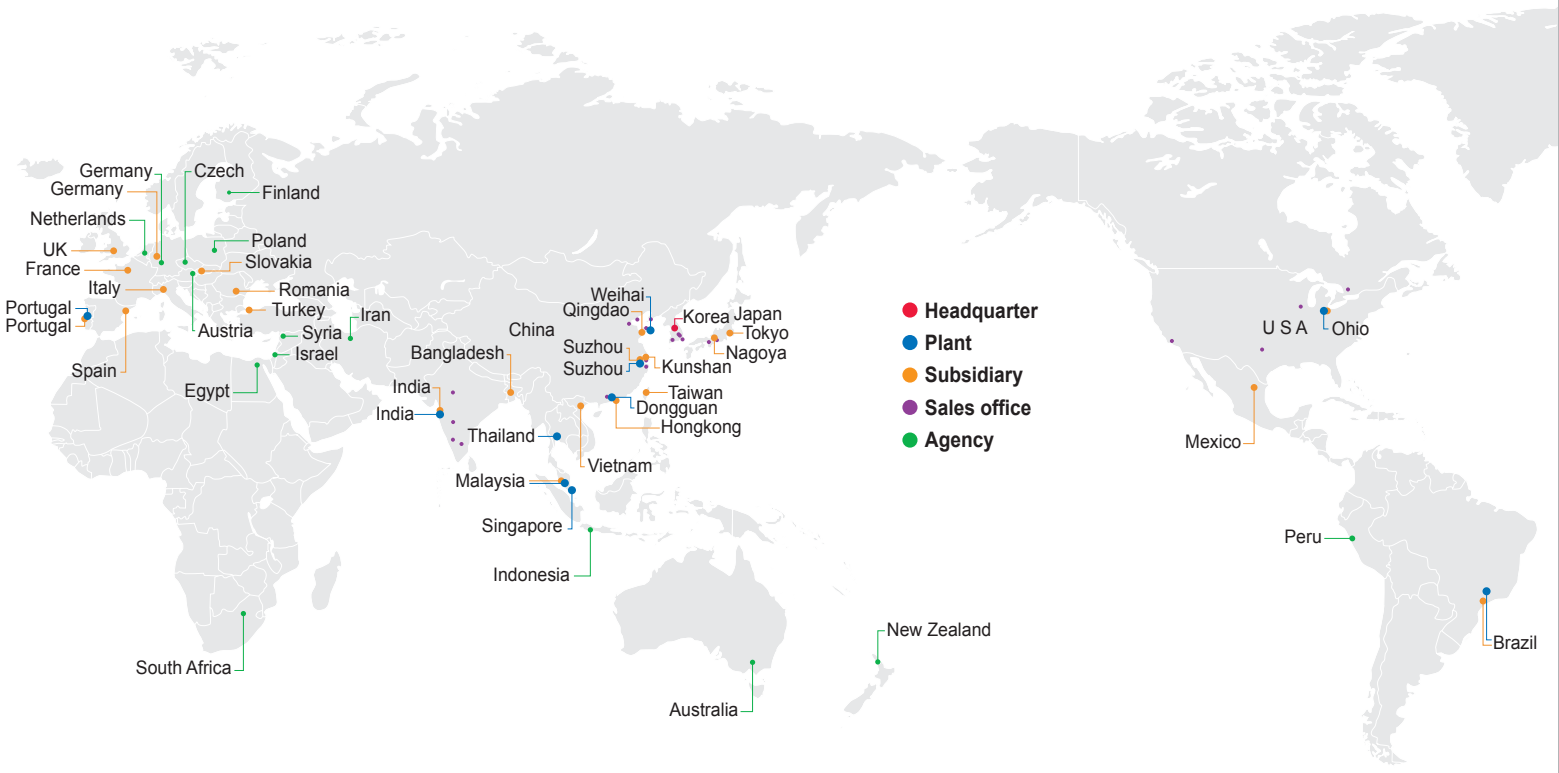
MODE C



Injection signal extension function

www.yudo.com

Any question? Access to http://qna.yudo.com



▲ We reserve the right to change specifications without notice.